

THE PREY OF SOME AUSTRALIAN SPHECID WASPS (HYMENOPTERA)

D.B. McCORQUODALE and C.E. THOMSON

*Department of Zoology, Australian National University, G.P.O. Box 4, Canberra, A.C.T., 2601**

Abstract

The prey taken from 15 species of sphecid wasps in New South Wales and the Australian Capital Territory are recorded. These include the first prey records for five species.

Introduction

Female wasps of the Sphecidae hunt a wide variety of insects and spiders to feed their larvae. The range of prey is much narrower within a tribe or genus (Evans and West Eberhard 1970; Bohart and Menke 1976). Some studies of prey use of Australian sphecids have confirmed patterns of prey use by congeners overseas, for example, the use of cicadas by *Sphecius pectoralis* Smith (Evans and Matthews 1971a). Other reports have established that Australian species use different prey than overseas congeners, for example, the use of Odonata by *Bembix coonundura* Evans and Matthews (Wheeler and Dow 1933; Evans and Matthews 1973). Here we report on the prey of 15 species of sphecid wasps, including the first records for five species, and note similarities and differences in prey use by related wasps. Female wasps and their prey were collected as they returned to their nests from March 1984 until December 1987. Most were collected near Warrah Trig in Brisbane Water National Park, N.S.W., at Camp Pincham or the Woolshed, Warrumbungle National Park, N.S.W and on the lower slopes of Black Mountain, Canberra, A.C.T. All wasps and prey are deposited in the Australian National Insect Collection, CSIRO, Canberra.

Results and Discussion

Table 1 is a compilation of the prey records. All records reported here are within the range of prey previously reported for each genus.

Two Australian species of *Sphex* Linnaeus are known to use Tettigoniidae as prey, the most common prey for *Sphex* worldwide (Bohart and Menke 1976; Evans et al. 1982). The use of Gryllacrididae by *S. vestitus* Smith is the first record from Australia and the fourth for the genus.

The five species of *Tachysphex* Kohl preying upon cockroaches recorded here are all members of the *brullii*-species group. Cockroaches are the usual prey of this Australian species group but are unusual prey for *Tachysphex* elsewhere (Pulawski 1977).

*Present address: Department of Biological Sciences, University of Calgary, Calgary, Alberta, T6N 1N4, Canada

Table 1. Prey taken from female sphecoid wasps. All prey are adult unless otherwise noted.

Subfamily and species	Date	Location	Prey	Previous records
Sphecinae				
<i>Sphex vestitus</i> Smith	15 Feb 86	Brisbane Water N.P.	Gryllacrididae	<i>Hyalogryllacris hyalinuna</i> Brunner
	16 Feb 86	Brisbane Water N.P.	Gryllacrididae	<i>H. hyalinuna</i> Brunner
	17 Feb 86	Brisbane Water N.P.	Gryllacrididae	<i>H. hyalinuna</i> Brunner
	1 Feb 87	Brisbane Water N.P.	Gryllacrididae	<i>H. hyalinuna</i> Brunner
<i>Prionyx globosus</i> (Smith)	5 Dec 85	Warrumbungle N.P.	Acrididae	<i>Phaulacridium vittatum</i> (Sjöstedt), nymph
	Jan 85	Hattah Lakes N.P. Vic.*	Acrididae	<i>Chortoicetes terminifera</i> Walker
<i>Podalonia tydei</i> (Le Guillou)	19 Nov 84	Warrumbungle N.P.	Noctuidae	<i>Agrotis porphyricollis</i> Guenée
				Bristowe 1971
Larrinae				
<i>Tachysphex depressiventris</i> Turner	23 Jan 85	Brisbane Water N.P.	Blattellidae	sp., nymph
	30 Jan 85	Brisbane Water N.P.	Blattellidae	sp., nymph
	10 Dec 86	Brisbane Water N.P.	Blattellidae	sp., nymph
	21 Jan 87	Brisbane Water N.P.	Blattellidae	sp., nymph
<i>T. mackayensis</i> Turner	17 Mar 85	Warrumbungle N.P.	Blattidae	<i>Melanozosteria</i> sp.
<i>T. contrarius</i> Pulawski	23 Nov 85	Warrumbungle N.P.	Blattidae	<i>Laxta</i> sp. nymph
<i>T. puginator</i> Turner	16 Dec 85	Warrumbungle N.P.	Blattidae	<i>Laxta</i> sp. nymph
<i>T. persitans</i> Turner	1 Dec 85	Brisbane Water N.P.	Blattidae	<i>Melanozosteria</i> sp.
	31 Jan 51	Mt Gingera, ACT†	Blattidae	<i>Platyzoosteria melanaria</i> (Erichson)

Table 1 (Continued)

<i>Lyroda</i> sp.	10 Feb 85	Brisbane Water N.P.	Gryllidae	Eneopterinae sp., nymph	Matthews & Evans 1971
<i>Sericophorus relicens</i>	10 Dec 85	Warrumbungle N.P.	Muscidae	<i>Musca vetustissima</i> Wilk	Matthews & Evans 1971
Smith					
<i>S. viridis</i> (Saussure)	4 Mar 84	Black Mt	Calliphoridae	<i>Calliphora tibialis</i> Macquart	Matthews & Evans 1971
	3 Apr 84	Black Mt	Calliphoridae	<i>C. tibialis</i> Macquart	Evans 1971
	3 Apr 84	Black Mt	Calliphoridae	<i>Calliphora</i> sp.	
Crabroninae					
<i>Rhopalum varitarsae</i>	5 Apr 84	Black Mt	Empididae	<i>Hilarientopsis</i> sp.	Evans & Matthews 1971b
Turner					
Nyssoninae					
<i>Austrogorytes</i>	28-29 Nov 87	Black Mt	Eurymelidae	<i>Eurymeloides lineata</i>	Evans & Matthews 1971a
<i>bellicosus</i> (Smith)				(Signoret), 7 adults 2 nymphs [†]	
	28-29 Nov 87	Black Mt	Cicadellidae	<i>Macroceps</i> sp.	
	12 Dec 87	Black Mt	Eurymelidae	<i>Eurymeloides lineata</i>	
				(Signoret)	
<i>Bembix alirifrons</i> Smith	25 Nov 84	Roselea, S of Coonabarrabran, NSW	Tachinidae	<i>Toxocnemis</i> sp.	Evans & Matthews 1973
<i>B. musca</i> Handlirsch	3 Feb 87	Brisbane Water N.P.	Apidae	<i>Trigona carbonaria</i> Smith	Evans & Matthews 1973
	6 Feb 87	Brisbane Water N.P.	Apidae	<i>T. carbonaria</i> Smith, workers	Matthews 1973

* Collected by C.A.M. Reid

† Collected by S.J. Paramonov

‡ Identification of nymphs tentative

Gryllids are the most common prey of species of *Lyroda* Say (Bohart and Menke 1976). An undescribed species is recorded preying upon gryllids here. In the only other report on an Australian species, Evans and Hook (1984) record another undescribed species of *Lyroda* preying upon Tridactylidae.

Matthews and Evans (1971) found males of *Calliphora tibialis* Macquart (Diptera) to be the most common prey of *Sericophorus viridis* (Saussure). Fourteen years later at the same aggregation we found the same situation. Several species of *Sericophorus* Swainson and Shuckard are known to capture bush flies, *Musca vetustissima* Walker (Matthews and Evans 1971); here we add *S. relucens* Smith to the list.

Evans and Matthews (1971b) found that *Rhopalum variitarse* Turner used dipterans from at least 4 families as prey. At the same Black Mountain site we add Empididae to the diverse types of flies used.

Eurymelids (Hemiptera) were the only prey of *Austrogorytes bellicosus* (Turner) reported by Evans and Matthews (1971a). Here the majority of individuals were eurymelids and one cicadellid (Hemiptera) was also found among the prey. One of the nymphal eurymelids was parasitized by a dryinid wasp (*Anteon* sp.). The use of worker bees of the genus *Trigona* Jurine confirms previous reports for *Bembix musca* Handlirsch (Evans and Matthews 1973).

Acknowledgements

Jo Cardale, Don Colless, Ian Naumann, K. Norris, David Rentz (ANIC), Mark Stevens (University of Sydney), Graham Goodyer (BCRI, Rydalmere) and W. Pulawski (California Academy of Sciences, San Francisco) kindly provided identifications of wasps and/or prey. Ian Naumann provided helpful comments on the manuscript. The N.S.W. National Parks and Wildlife Service allowed collections to be made in National Parks through permit B263 to DBM.

References

- ALCOCK, J., 1980. Notes on the reproductive behaviour of some Australian solitary wasps (Hymenoptera: Sphecidae, *Tachysphex* and *Exeirus*). *Journal of the Australian Entomological Society* 19: 259-262.
- BRISTOWE, W.S., 1971. The habits of a West Australian sphecid wasp. *Entomologist* 104: 42-44.
- BOHART, R.M. and MENKE, A.S., 1976. *Sphecid wasps of the world: a generic revision*. Pp. ix + 695. University of California Press, Berkeley.
- EVANS, H.E. and HOOK, A.W., 1984. Nesting behaviour of a *Lyroda* predator (Hymenoptera: Sphecidae) on *Tridactylus* (Orthoptera: Tridactylidae). *Australian Entomological Magazine* 11: 16-18.

- EVANS, H.E., HOOK, A.W. and MATTHEWS, R.W., 1982. Nesting behaviour of Australian wasps of the genus *Spheg* (Hymenoptera, Sphecidae). *Journal of Natural History* 16: 219-225.
- EVANS, H.E. and MATTHEWS, R.W., 1971a. Nesting behaviour and larval stages of some Australian nyssonine sand wasps (Hymenoptera: Sphecidae). *Australian Journal of Zoology* 19: 293-310.
- EVANS, H.E. and MATTHEWS, R.W., 1971b. Notes on the prey and nests of some Australian Crabronini (Hymenoptera: Sphecidae). *Journal of the Australian Entomological Society* 10: 1-4.
- EVANS, H.E. and MATTHEWS, R.W., 1973. Systematics and nesting behavior of Australian *Bembix* sand wasps (Hymenoptera, Sphecidae). *Memoirs of the American Entomological Institute* 20: 1-387.
- EVANS, H.E., MATTHEWS, R.W. and PULAWSKI, W., 1976. Notes on the nests and prey of four Australian species of *Tachysphex* Kohl, with a description of a new species (Hymenoptera: Sphecidae). *Journal of the Australian Entomological Society* 15: 441-445.
- EVANS, H.E. and WEST EBERHARD, M.J., 1970. *The wasps*. Pp. vi + 265. University of Michigan Press, Ann Arbor, Michigan.
- MATTHEWS, R.W. and EVANS, H.E., 1971. Biological notes on two species of *Sericophorus* from Australia (Hymenoptera: Sphecidae). *Psyche, Cambridge* 77: 413-429.
- PULAWSKI, W., 1977. A synopsis of *Tachysphex* Kohl (Hym., Sphecidae) of Australia and Oceania. *Polskie Pismo Entomologiczne* 47: 203-332.
- WHEELER, W.M. and DOW, R., 1933. Unusual prey of *Bembix*. *Psyche, Cambridge* 40: 57-59.